Land Use Policy of the Ministry of Energy, Mines and Petroleum Resources

Information Paper

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Land Use Committee

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Preface

This paper introduces and documents the basic elements of the Ministry of Energy, Mines and Petroleum Resources land use policy. While the interests of the Ministry's three operating Divisions are diverse, reflecting different statutory mandates, this paper presents a compendium of Ministry policies bearing upon land and water use. The contents are designed to inform other resource agencies and the interested public of the land use concerns, responsibilities, programs and policies of the Ministry.

The paper is structured in three main sections. The first summarizes the Ministry's functions and goals, structure, organization and reporting channels for dealing with land use issues. The second section discusses key land and water use issues and challenges recognized by the Ministry and includes procedures designed to deal with them. The final section presents the current land use principles, policies and supporting strategies of each Division.

The Ministry Land Use Committee invites comment on this paper by interested parties.

Comments or suggestions should be directed to:

Dr. R. W. Durie,
Chairman, Ministry Land Use Committee
Assistant Deputy Minister
Petroleum Resources Division
Ministry of Energy, Mines and
Petroleum Resources
Legislative Buildings
Victoria, B.C.
V8V 1X4

1. Why Ministry Interest In Land and Water Use?

The Ministry has stewardship over a diverse range of resources, most of them non-renewable, their quantity and character more a process of nature than a product of man. Historically the spectrum of activity represented by the Ministry has always played a prominent role in British Columbia. In many cases mineral and petroleum development provided the impetus for settlement and other economic activities to interior and northern regions of the Province. In recent decades energy developments have attained priority in response to an increasingly urbanized and energy-demanding Provincial population.

As with other agencies that manage or utilize particular components of the Province's resource base, this Ministry has a responsibility to recognize the dual nature of surface and subsurface attributes as commodities and resources. The Ministry responsibility to manage these resources to the maximum economic benefit of the Province while, at the same time, ensuring due regard for safety and protection of the environment, has short and long term implications affecting present and future generations.

The Ministry is also aware it must conduct its activities within an increasingly more complex socio-economic environment. As our population grows and expectations continue to expand, greater demands are placed upon the Province's land and water resources. While techniques of data collection and levels of knowledge are improving, the impact of man's activities upon the land, its ecosystems and the socio-economic fabric of a resource-based society continues to multiply. There is a responsibility to carefully weigh the merits of resource development proposals and examine tradeoffs in the context of needs and alternate opportunities.

The Ministry accepts its share of this responsibility. We want to better understand other agencies' concerns and we want to assist others to understand our needs and concerns. This information paper is a step towards improved communication and a more integrated approach to the use of British Columbia's land and water resources.

2. Summary of Ministry Organizational Approach

2.1 Purpose and Function

The Ministry of Energy, Mines and Petroleum Resources develops and implements comprehensive policies and programs that encourage the discovery, development and production of energy, mineral and petroleum resources, and regulates these activities to the benefit of the Province while protecting the biophysical and social environments. Ministry operating goals pursue this broad mandate through specific legislation and programs, which include advice, assistance, coordination and cooperation with other Crown and private agencies and industry.

2.2 Organizational Structure

The Ministry is structured in four Divisions, each under an Assistant Deputy Minister and each comprising a number of Branches. (See Figure 1) Each Division has specific goals and objectives related to its particular mandate.

The basic goal of the **Energy Resources Division** is to facilitate rational development and sound regulation of British Columbia's energy resources in order to obtain a secure energy future for the Province. Pursuit of this goal involves energy forecasting, policy development and implementation, and coordination of the Energy Project Review Process.

The **Petroleum Resources Division** has the responsibility for stewardship of British Columbia's petroleum, natural gas and geothermal resources, on land and in the adjacent inland waters. The goal is to administer these resources for the maximum benefit of the Province and in a manner consistent with sound engineering, environmental and safety practices.

The **Mineral Resources Division** is the largest within the Ministry. Its basic goal is to advance and administer policies and programs to promote the discovery, development and production of British Columbia's mineral resources to the benefit of the Province while maintaining a high standard of environmental quality and safe working conditions at mining operations.

A fourth Division of the Ministry is responsible for finance and administration. In addition, the Energy Development Agency, B.C. Hydro and Power Authority, the B. C. Petroleum Corporation and the B.C. Utilities Commission report to the Provincial government through the Minister of Energy, Mines and Petroleum Resources.

2.3 Land Use Organization

Land use issues and concerns are channelled through the Ministry essentially via two committees: the Ministry Land Use Committee (MLUC), with Assistant Deputy Minister or Director level representation from the three resource Divisions, and the Land Use Coordinating Committee (LUCC), which is an interbranch working committee. (See Figure 2)

A Land Use Coordinator is the link that ensures a reliable flow of information within, between and outside these Committees. Coordination is facilitated through the function of the Land Use Coordinator as secretary to both MLUC and LUCC.

The above two committees report through an executive committee to the Deputy Minister and the Minister and through them to the Environment and Land Use Technical Committee (ELUTC) and the Environment and Land Use Committee of Cabinet (ELUC).

The work of the MLUC is mainly policy-oriented, including liaison with other resource ministries. The LUCC deals with specific technical land use issues, relying on a direct relationship with Ministry regional staff. Regional staff discuss Ministry land and water use issues with other resource agencies in their regions. Through these mechanisms the Ministry participates in a direct advisory capacity to ELUTC and ELUC on land use and resource management issues.

Figure 1

Ministry of Energy, Mines and Petroleum Resources

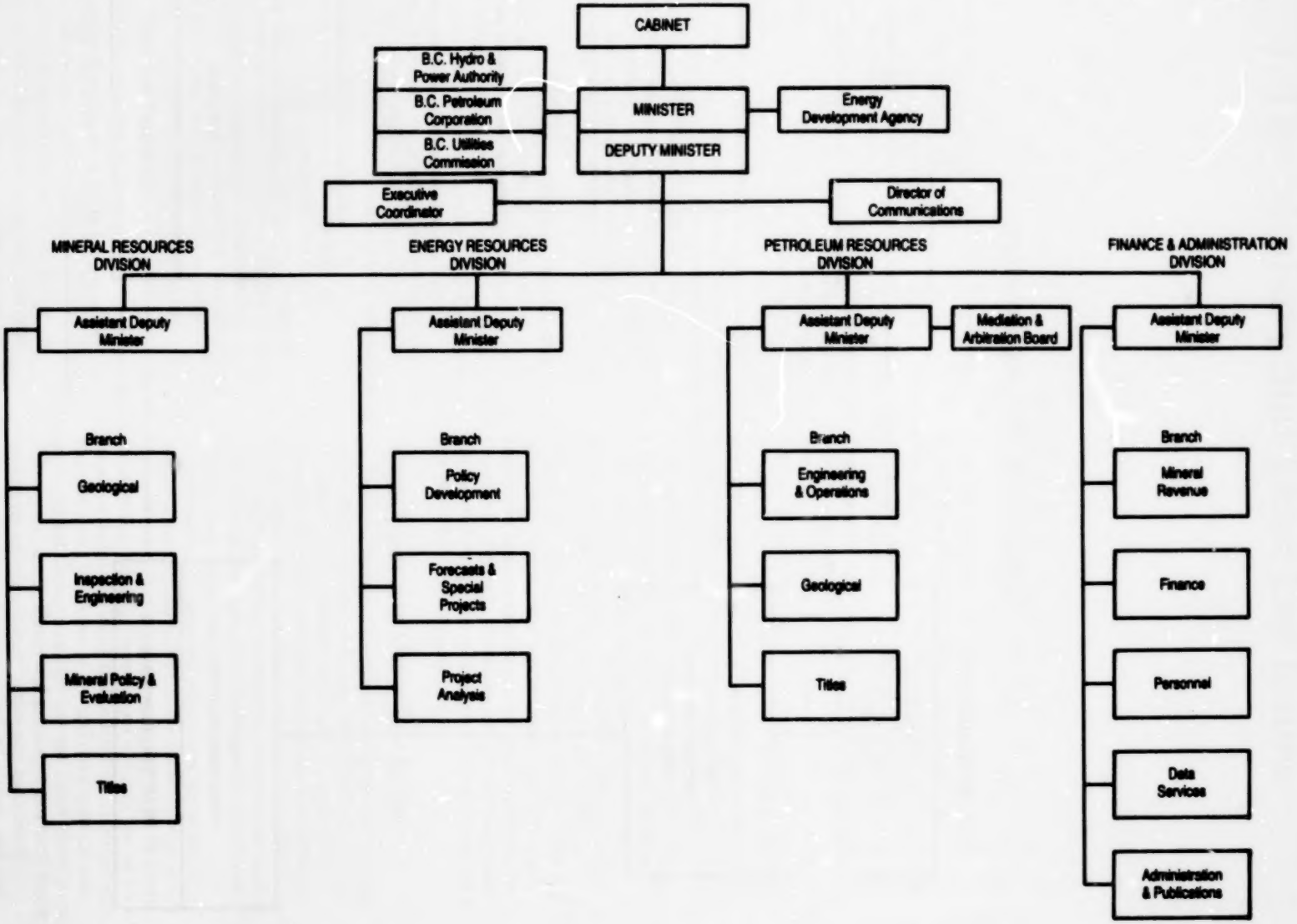
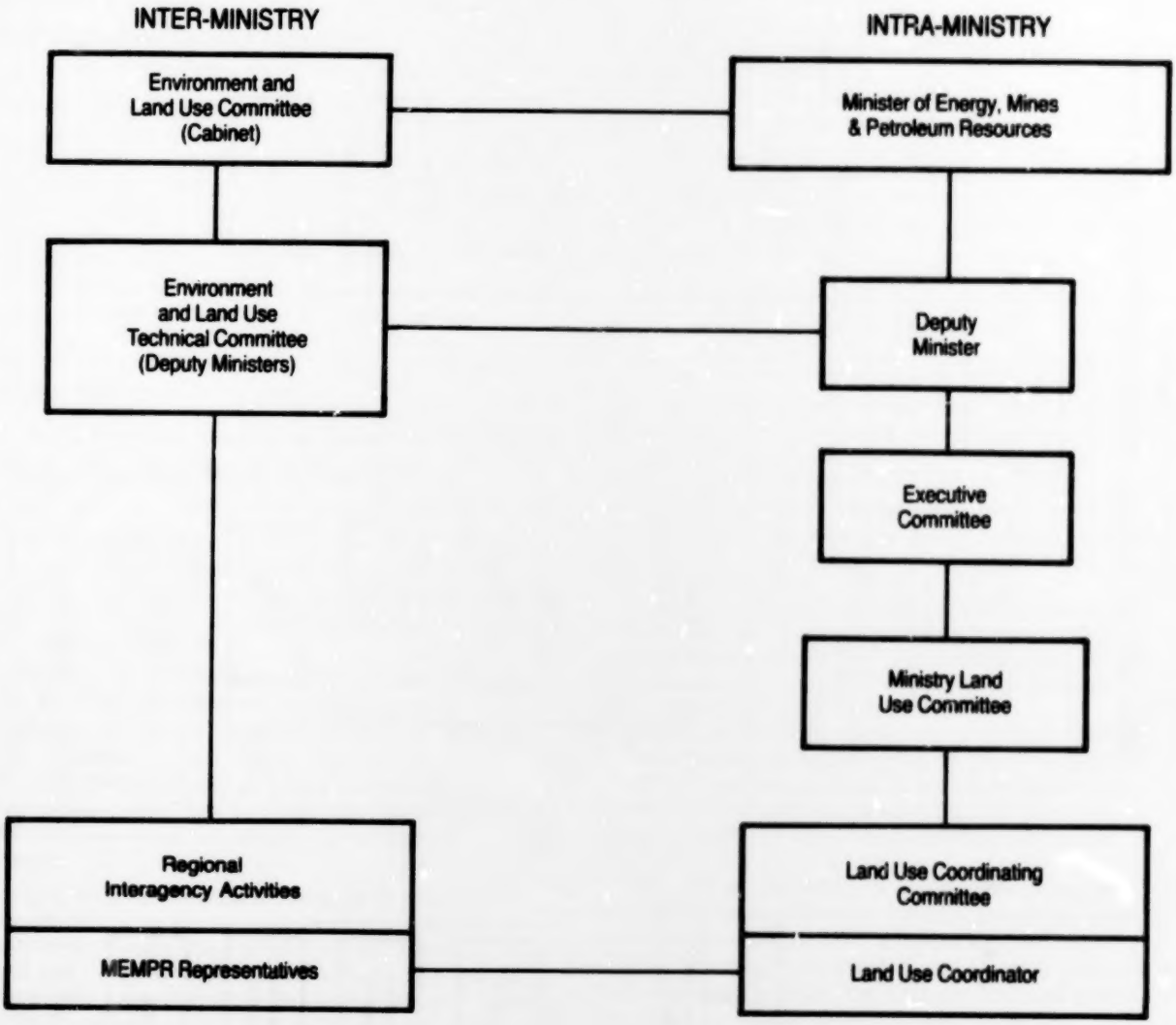


Figure 2

Land Use Reporting Structure



3. The Ministry and Land Use Issues

3.1 The Challenge of Land Use Management

Resource management in British Columbia in the last decade has undergone considerable change and development. In response to increasing pressures on a finite resource base and rapid increases in the scale and capital requirements of many resource developments, inter-ministry processes for project assessment and land use planning have become more sophisticated. Many of the larger resource ministries have reorganized and decentralized. Mechanisms have been developed to ensure a high level of public participation in resource management decision-making. These factors have resulted in the intensification of land use planning in most resource sectors.

Relative to other resource ministries, the Ministry of Energy, Mines and Petroleum Resources has remained small and less decentralized. The continued reliance by this Ministry on the private sector to undertake resource inventories differs from the approaches of other ministries who have undertaken large scale resource inventories. At the same time the importance to the Province of the revenues generated by energy, mineral and petroleum resources has increased rapidly.

There remains, however, a general lack of understanding by other ministries and many segments of the public of the unique challenges of managing these resources. With the changes of the last decade the Ministry has had to increasingly concern itself with land use issues and respond to the challenges and issues which will characterize resource management and development in the coming years.

3.2 Energy Resource Development

Future energy requirements will have major impacts on the land resources of the Province. The provision of secure energy supplies necessary for a growing population and a satisfactory level of economic growth, over time, will require energy project developments. These projects may use relatively large areas of Provincial land and, in many cases, may modify flow regimes of principal river systems. Land and water allocations for major energy developments may have irreversible impacts and constrain opportunities for multiple use. The Province's "Energy Project Review Process" was established as a means of comprehensive evaluation of proposed energy developments, including their economic, social and environmental implications. It seeks to identify all resource values in order to ensure that responsible and informed land and water decisions related to energy projects are made and means of minimizing adverse impacts are identified.

The average annual energy growth rate in the Province for the period 1981–2000 is forecast to be approximately 2.5% for electricity and 1.5% for natural gas. To a large extent existing technology will be relied upon to meet this demand. This may imply significant land commitments for new hydro-electric reservoirs, thermal coal mines and generation plants, geothermal power plants, electrical transmission lines and pipelines. (See Appendix A)

Some Land and Water Use Issues

The land required for major energy developments may often compete with, and directly affect, a range of other land and water uses, such as: agriculture, forestry, wildlife, fisheries, recreation and settlement. Such projects are usually characterized by their large scale and substantial capital requirements, as well as the scale of their potential effects, both direct and indirect, on other land and water users.

Hydro-electric generating facilities, for example, require commitments of valuable valley bottom lands for reservoirs, thus precluding the use of those lands for ongoing farming, forestry and wildlife use, or for transportation corridors and settlement. Additionally, the effects on the flows of natural river systems may entail major changes in fisheries and have impacts on other water users. Dams and pondages can have major effects on existing communities and associated infrastructure such as roads and pipelines, and can entail relocations. Installation of major facilities can

also have indirect effects related to expansion of existing settlements or the requirements for new ones.

Transmission lines and pipelines can preclude other uses such as sustained yield forestry. In some instances they can pose operational problems for farming and settlement unless carefully designed. Additionally, major energy facilities can have health oriented concerns such as potential atmospheric pollution which must be addressed both in terms of decisions to allow them to proceed and for their operation.

As with forest and farm lands, recreational and wilderness lands can also be affected. Energy facilities may compete directly with the existing or potential recreational uses, or may present aesthetic concerns which need to be addressed. Some energy projects may represent the first major development proposals in areas with a previously untouched "wilderness character".

Land and water impacts associated with energy facilities, occur at exploration, development, and operational phases, and require consideration. Substantial field work is usually required to establish the feasibility of major energy projects. The effects of such exploration work must be managed to ensure that potential adverse impacts are minimized. This is done in close conjunction with the Ministry of Lands, Parks and Housing, by application of "terms and conditions" under the *Land Act* necessary to manage the exploration activities.

Many large scale energy projects present the difficult problem that the energy benefits may be most enjoyed by industries and residents outside the region in which the project is proposed. Hence project benefits and costs and their distribution must be considered. Proposals to mitigate and compensate for adverse effects must, therefore, be weighed into project decision making.

In addition to land use, other questions associated with major energy projects centre on their financial and economic dimensions. Government must determine project impacts on the financial position of utilities, aggregate capital requirements, "project justification" and the size and distribution of the benefits resulting from the project.

Energy Project Review Process

The substantial land use and socio-economic impacts associated with major energy projects require a careful process of evaluation. Such a process was put in place by the *Utilities Commission Act*, which established the Energy Project Review Process. This Process requires comprehensive consideration of proposed energy projects and includes their financial and economic feasibility, costs and benefits, and proposals for minimizing adverse effects and maximizing positive effects. Regulations pursuant to the Act detail the particular information and procedural requirements.

The Process is the vehicle by which it is determined if a project should be authorized for construction. If authorized, the conditions for construction and operation can include means for mitigating adverse impacts and compensating for losses to other affected land and resource interests. This Process provides for the option of public hearings where the range of interests, which must be considered in making a decision, can be heard.

In the operation of this Process, the Division works to provide to proponents a "single window" in their approach to government. Under the coordination of the inter-ministry steering committee known as the Energy Project Coordinating Committee (plus supporting working committees), Government can streamline and integrate its requirements related to individual projects thereby avoiding unnecessary delays or conflicting advice to proponents.

The Review Process uses a phased approach which allows for early identification of major policy issues. This focuses concerns and identifies the data and analyses necessary for their resolution. This is aimed at minimizing uncertainty for proponents by clarifying expectations and maximizing the effectiveness of efforts which are placed into developing sound project proposals.

The Process encompasses the following tasks which expressly relate to land and water use issues, namely:

a) coordinating proposals for the use and development of energy resources with policies of government related to land and water use, resource management and economic development.

b) providing a legislative framework for a process which supplies an information base for decision-makers to determine whether or not a project is in the public interest and if construction should proceed. Information requirements include an analysis of economic, financial and technical feasibility as well as mitigation and/or compensation proposals.

c) ensuring that land and water use and other resource and social impacts of a proposed project are addressed.

d) providing terms and conditions for construction and operation of major energy projects that recognize energy resource and land and water use impacts and the statutory responsibilities of related ministries. These must of necessity include provisions for surveillance and monitoring of the project.

3.3 Petroleum Resource Development

Future subsurface petroleum, natural gas and geothermal resource developments will require access to and use of some surface area. Although surface use disturbances resulting from petroleum industry activities are often minimal and of short duration, the Ministry recognizes that conflicts with other resource values can occur.

Exploration for and possible development of petroleum and natural gas resources in Provincial coastal waters will present unique challenges. These include potential conflicts with other marine resource users as well as on-land impacts from the development of supporting infrastructure. The Division is establishing a program to ensure the early identification of conflicts through involvement of the public, industry, the Federal Government and other Provincial agencies.

Some Land and Water Use Issues

The agriculture and petroleum industries often compete for the same land base. Presently, this competition is confined to the Peace River area but may occur in other areas of the Province as petroleum resources are discovered and developed. However, it should be recognized that petroleum development can be of benefit to the agriculture industry by providing access to potential farmland.

Petroleum industry activity can interfere with the land's agricultural potential through soil erosion and reduction of field size to uneconomic units. Therefore, encouragement of sound engineering practices to minimize soil erosion will continue to be a priority of the Ministry. Where it becomes necessary to carry out infill drilling on prime agricultural land, the problems of reduced farm field size and associated impacts warrant further investigation. Possible solutions may include directional drilling and/or changes in well spacing patterns.

The forest industry faces similar difficulties to the petroleum industry in maintaining and protecting its land base. This Ministry recognizes that petroleum-related activities can result in losses of standing crops of timber and associated land resource base through such activities as road and well site building, fluid disposal trenching and seismic line clearing. The Ministry will endeavour to promote timber salvage and will continue to encourage operating practices that result in minimal forest land base loss.

Damage to fish and wildlife habitats from petroleum industry activities generally results from the construction of new access routes. Construction can result in soil erosion with subsequent stream siltation or other negative habitat modification. Roads built into previously inaccessible areas can create pressure on wildlife through harrassment, vehicle kills and overhunting. The latter is of special concern when roads open traditional Indian hunting areas to sports hunters.

These probiems can be partially resolved through suitable road location and appropriate access management including, perhaps, road closure at the end of operations. In certain cases, wildlife harassment can be reduced by scheduling exploration activities to avoid seasons critical to wildlife.

Offshore exploration and development may have an impact on shellfish habitats, spawning grounds and commercial fisheries. A public hearing process is committed to identify such possible impacts prior to offshore drilling. Subsequent regulations and operating procedures will be established to suitably manage these impacts.

The question of petroleum and natural gas exploration in recreational areas usually involves loss of aesthetic values and opportunities for wilderness experiences. While these losses cannot be totally eliminated they may be considered short term and, in most cases, can be mitigated through appropriate reclamation techniques. In the offshore environment, drilling rigs would have a minimal impact on coastal cruising. Beneficial effects would include enhanced rescue capability and navigational aids.

Activities of the petroleum industry may have an impact on future settlement in rural areas. Access roads are often not suitably located or of sufficient standard to be of use in future rural development. Existing roads can complicate the creation of regularly shaped parcels of land for alienation, and narrow roads can be hazardous if subjected to public traffic. On the other hand, petroleum companies cannot be expected to bear the cost of road construction surplus to their requirements. Conflicts may be lessened by considering route modification during the referral process, joint funding of multiple resource use trunk roads and, in special cases, government funding of major roads.

Seismic exploration cut lines can provide valuable access routes for trappers and guides but, under certain circumstances, petroleum and natural gas exploration can be disruptive to their operations. The ongoing dialogue between the B. C. Trapper's Association and various petroleum industry associations has led to notification systems and operating practices that have alleviated many of the conflicts. The Ministry will continue to play an active role in this dialogue.

Programs and Procedures

Full participation in all land planning exercises is necessary if the Ministry is to protect land with potential for petroleum, natural gas or geothermal resources from land use designations that preclude exploration and development. One difficulty in the Ministry's involvement in land use planning relates to inventory. Petroleum, natural gas, or geothermal resources cannot be evaluated or inventoried in the same manner as timber, water and wildlife or other surface resource values such as recreation. Only through exploration can the presence or absence of subsurface resources be determined; even then, areas that have been explored with negative results may, in future with technological advances, prove to contain viable resources.

At present, all of the Province's sedimentary basins must be considered to have petroleum and natural gas potential. Similarily, large areas of the Province are thought to be prospective geothermal energy sources. (See Appendices B and C). It is important, therefore, that land use options be kept open on these lands to ensure opportunities remain for development of valuable subsurface resources. In sensitive areas, restrictions on exploration methods or specific reclamation requirements could be imposed to mitigate disturbances rather than a total ban on exploration. For example, geophysical exploration could be restricted to portable methods and reclamation of drilling sites could include reforestation.

Recognition of the above and similar land use issues has led to the development of programs that provide for consultation with other ministries, the establishment of procedures for right of entry on private land and standards of reclamation for surface disturbances.

a) Consultation

Prior to authorizing construction of roads and wellsites or the commencement of geophysical programs, the Ministry refers the proposal to other ministries for comment. The project proponent must submit plans of the proposed operations to the Petroleum Resources Division for review. Where applicable, the plans are circulated to the Ministries of Forests; Lands, Parks and Housing; Environment; and Agriculture and Food for comments on mitigating measures necessary to protect resource values of concern. If required, the Ministry coordinates a joint field inspection to determine the impact of the proposal. After resolution of conflicts, the appropriate mitigating measures are formalized in a letter of approval addressed to the applicant, copies of which are sent to all concerned ministries.

Offshore exploration and development will present land and water use conflicts which will have to be specifically identified and managed. In anticipation of possible renewed offshore activity the Federal and Provincial Governments have initiated a joint environmental review.

b) Right of Entry to Private Land

The holder of petroleum and natural gas subsurface rights acquired from the Province under the *Petroleum and Natural Gas Act* is guaranteed access to the surface to explore for, develop and produce petroleum and natural gas. If a surface land owner refuses entry or the two parties cannot agree on terms, the matter can be referred to the Mediation and Arbitration Board. The Board assists the land owner and petroleum operator concerned to reach an accommodation on access, operation and financial compensation which is satisfactory to both parties. The *Geothermal Resources Act* provides for the application of the *Petroleum and Natural Gas Act* in respect to right of entry for geothermal industry purposes.

c) Reclamation Standards

In keeping with integrated land use practices, the Ministry has developed guidelines for reclamation of surface disturbances resulting from petroleum industry activities. The procedures and standards are based on the Division's "Guidelines for Construction and Cleanup of Roads, Leases, and Seismic Lines in Petroleum Exploration Areas".

To facilitate full and cost-efficient restoration of a site, reclamation must be considered during the construction phase. Prior to constructing a petroleum industry road or wellsite or undertaking a geophysical program, the operator is required to submit an Initial Environmental Investigation Report to the Petroleum Resources Division. This report outlines anticipated environmental impacts as well as construction techniques and restoration procedures that will be implemented. Before commencing wellsite restoration, the operator must submit to the Division a detailed reclamation plan. The Division conducts inspections of the construction and reclamation phases of operations to ensure that commitments are met.

3.4 Mineral Resource Development

The land contained within British Columbia's boundaries is generally of a high mineral potential. This potential, evident in the number, size and distribution of various mineral deposits discovered within the last century, has been partially realized through the mining of those deposits which have been economically viable. (See Appendix D)

The cumulative value of this production is some $25 billion in actual dollars; the value of remaining discovered reserves of mineral products is at least double that amount. As further discoveries are made, the ultimate value of all mineral resources could far exceed this total. However, this potential can only be realized if the remaining mineral deposits can be located and developed.

Exploration and Development

Exploration is the first step in the realization of mineral potential and, since the ratio of actual mines to known deposits is approximately 1:1000, it is obvious that a great number of mineral deposits must be found and examined. It is also obvious that such deposits cannot be found if explorationists are denied access to the land within which the deposits occur.

The Mineral Resources Division, therefore, attempts to ensure that the maximum amount of land is available for mineral exploration, since a small percentage of that land area will be found to contain substantial mineral deposits. An even smaller percentage will contain deposits significant enough to consider extraction on a viable scale. A substantial restriction of access for exploration reduces the potential for new mines, with compounding economic consequences. However, increasing competition from other surface resource users has led to numerous requests to restrict or prohibit mineral resource-oriented activity on an increasingly larger amount of land.

The optimum approach to the resolution of this issue is to ascertain the mineral potential of the area in question and respond to each request on an individual basis. Proper assessments require geological, geochemical and geophysical surveys and drill testing of targets identified. This can include repeated cycles of exploration on the same land area spurred by changes in prices and demands for minerals and by more efficient exploration techniques.

While the Ministry regularly engages in geological and limited geochemical surveys, comprehensive inventories of mineral potential through detailed survey and drilling programs are undertaken by the private sector. Given the large number of requests and the high costs involved, the Ministry has the staff, time and budget to carry out only a limited number of these initial surveys. Consequently, considerable unevaluated land has already been alienated from mineral resource-oriented activity. There are currently 4.5 million hectares of land from which mineral exploration activity is precluded. Requests to alienate a further 2 million hectares have been submitted to the Ministry, which if granted would prevent mineral exploration on 7% of the Provincial land base.

Some Land and Water Use Issues

A significant amount of initial exploration activity does not involve the use of the surface, such as airborne geophysical surveys and helicopter assisted stream sampling. A more intensive exploration effort, however, does require surface access to target areas. This can result in the construction of roads and trails, aircraft and helicopter landing areas and the clearing, drilling or trenching of the surface to determine the nature and extent of the mineral deposits.

The search for deposits will obviously take mineral explorationists into areas with other resource interests, be those agriculture, forestry, wildlife, recreation lands and/or areas of great aesthetic appeal. This can produce conflicts between those who are interested in discovering and developing mineral resources and those who are primarily concerned with dedicating the surface area to an alternative use.

This Ministry has recognized this potential for conflicts and has issued in the "Guidelines for Coal Exploration" and "Guidelines for Mineral Exploration" standards for obtaining access to and reclaiming lands disturbed by exploration activities. These standards vary, depending on the degree of possible conflict with other resource values. They range from the less rigorous requirements in areas of low alternative resource values to careful selection of access road location, construction, maintenance, drainage and possibly eventual removal, recontouring and reseeding in high conflict areas.

The Ministry also requires a plan of work to be filed prior to certain exploration activities taking place and makes use of a bonding procedure to ensure proper adherence to reclamation standards. In the final analysis the mineral potential of an area can be assessed using methods which, by respecting other land use requirements, are compatible with the resource management goals of other Provincial ministries.

The development of commercially viable deposits is addressed through the "Guidelines for Mine Development." This inter-agency review process uses a staged consultative approach to encourage dialogue between developers and other resource agencies to ensure that all potential impacts are given full consideration. Problem areas are identified and the mine developer is advised to take appropriate action. The process has been generally accepted as a concise, step-by-step procedure towards permit issuance and a high level of consultation has been achieved to date between agencies and developers.

Mining activity requires the removal of the non-mineral overburden, the disposal in waste dumps of rock produced with the ore, and the impounding of

tailings after the metallic commodities have been removed. Careful siting and contouring of waste dumps and the utilization of overburden capable of sustaining vegetation ensures the stability of such dumps. Ongoing research in the reclamation of tailings ponds has resulted in the successful growth of forage crops.

Mining may require the redirection of existing drainage systems and always necessitates the control, collection and treatment of any ground water or run-off from the mine site. This is essential to avoid leaching of soluble minerals into, and subsequent pollution of natural water systems. Accordingly, mine drainage and pollution control plans are carefully developed between the project proponent and the regulatory agencies.

Mining activity may also result in the release of dust; accordingly abatement procedures must also be designed into the mining operation and made the subject of licencing conditions. This is a particular concern in mining operations where settlement is nearby or located in the vicinity of the access and transportation corridors. Noise, light and other concerns that could affect settlement must also be carefully considered at the time of locating and designing mining facilities to avoid and minimize impact on other resources or on other land uses.

Mines are often located in remote areas and require either power lines or their own power sources, the location of which must be subject to careful inter-ministry planning to avoid or to minimize conflicts with other land uses. The same is true of roads and railways. New townsites must also be carefully located, not only from the standpoint of creating viable communities, but also to ensure that they are built to maintain the best of the natural amenities.

It is clear then that only well considered planning and inter-ministry communication can ensure the maximization of the benefits from mining operations while at the same time minimizing their adverse impact on other resources, both land and water.

4. Land Use Principles, Policies and Strategies

Principles

Certain land use principles guide Ministry land use activities and can be summarized as follows:

1) Development of mineral, petroleum and energy resources should follow established review procedures that include a commitment to inter-ministry advance notification.
2) Large scale development projects with significant environmental, economic and social impacts should continue to include opportunities for public consultation and review.
3) Adequate mitigation and, if necessary, compensation for resource exploration and development impacts consistent with "Environmental and Social Impact Compensation/ Mitigation Guidelines" should be a feature of all projects.
4) Fair compensation should be made for the use of private surface rights related to exploration and development activities.
5) Cooperation with other ministries and active participation in their planning processes is essential in pursuing integrated resource management and multiple use of public land and water. Multiple use, in this Ministry's view, must provide for the beneficial use of the resources managed by this Ministry in conjunction with those managed by other ministries.
6) The inventory of mineral, petroleum and energy resources will depend upon an active exploration industry, which in turn depends on the availability of large tracts of land for exploration and realistic environmental land and water use regulation and guidelines.

In addition, the Ministry intends to pursue the feasibility of adhering to the following principles:

1) Decisions on land and water use that affect mineral, petroleum and energy development will be based on a broad assessment of all benefits and costs further to the principles embraced in British Columbia's "Guidelines for Benefit-Cost Analysis".
2) Exploration will not be prohibited in any area, except where expressly indicated by law or unless effective standards cannot be met.
3) Proposals to alienate land from energy, mineral and petroleum exploration must be preceded by an assessment of resource potential: such assessment will be funded by the agency requesting the designation.

Policies and Strategies

Following from these principles and the material in previous sections of this paper, land use policies and supporting strategies have evolved within each Division. These are presented below; policies are broad directives and commitments and strategies are the means for their delivery.

4.1 Energy Resources Division

Division land use policies are based on the Ministry's Energy Policy Statement of February 1980, "An Energy Secure British Columbia; The Challenge and the Opportunity". The major vehicle to implement these policies is the Energy Project Review Process established pursuant to the *Utilities Commission Act* and its supporting regulations (388/80 and 389/80).

Land Use Policies

1) To provide general direction and information on the supply, demand and development of energy resources in B.C. so that this information can be factored into land use decision-making.
2) To thoroughly evaluate in an integrated and efficient manner, proposed energy development projects through the Energy Project Review Process, with its requirements for full consideration of social, environmental and land use implications.
3) To provide and enhance opportunities, as appropriate, for the participation of other ministries, the private sector and the affected public in the Energy Project Review Process.
4) In accordance with B. C. Regulation 388/80, to apply the principles of the "Guidelines for Benefit-Cost Analysis" and the "Environmental and Social Impact Compensation/Mitigation Guidelines" to all regulated energy projects.

Supporting Strategies

1) To further refine the administration of the Energy Project Review Process in order to continually enhance its effectiveness.
2) To undertake research projects as required on the generic issues of energy development related to land and water use.
3) To continue consultations to ensure that the implementation of Provincial energy policy considers the goals and objectives of other resource management agencies of government and private resource users.
4) To ensure that pertinent industry and public service officials and the interested public are familiar with the requirements and procedures of the Energy Project Review Process.

4.2 Petroleum Resources Division

Land Use Policies

1) To ensure land use planning and proposed designations of surface land fully consider the potential for petroleum, natural gas and geothermal exploration and development.
2) To maintain and apply standards of reclamation that are consistent with integrated land use practices.
3) To develop, negotiate and use special exploration methods and reclamation measures where environmental sensitivities and other special circumstances dictate.
4) To continue to develop and apply methods that make exploration and development more compatible with other land use values and activities.
5) Through mediation and arbitration, to assure agricultural interests are respected by petroleum companies when accessing agricultural land, and to assure full compensation to the affected land owner.
6) To ensure offshore petroleum exploration and development activities proceed only under strict standards which consider environmental sensitivities and the requirements of other coastal resource users.

Supporting Strategies

1) To ensure industry compliance with the "Guidelines for Construction and Cleanup of Roads, Leases, and Seismic Lines in Petroleum Exploration Areas".
2) To strengthen the public information program through publications, presentations and public consultation.
3) To continue to take a lead role in the regulation of the petroleum industry while fully addressing the concerns of other resource agencies.
4) To encourage cooperative development and multiple use of resource roads.
5) To support the efforts of private user groups to jointly resolve their land use difficulties with minimum government involvement and regulation.
6) Further to Land Use Policies 3 and 4, if infill drilling is necessary, to investigate the feasibility of changing well spacing patterns on agricultural land in order to minimize disruption of farming practices.
7) To continue to encourage exploration, development and operating practices that minimize timber and forest land base loss.
8) To ensure the use of special construction techniques and reclamation procedures in sensitive areas.
9) To consider scheduling exploration activities in important wildlife habitats to avoid times critical to wildlife.
10) To ensure that a comprehensive public hearing is conducted prior to any resumption of offshore petroleum exploration.
11) To develop and implement suitable standards, guidelines and regulations governing the exploration and development of offshore petroleum resources.

4.3 Mineral Resources Division

Land Use Policies

1) To ensure that the development of the Province's mineral resources is undertaken in a manner consistent with sound environmental and land use management practices.
2) To ensure that the potential for subsurface mineral exploration and development is fully considered in land use planning and proposed designation of surface lands.
3) To maximize the land available for mineral and coal exploration to ensure continued discovery of viable deposits.
4) To thoroughly evaluate proposed mineral developments through the "Guidelines for Mine Development".

5) To adopt special exploration techniques and specifications in areas of high environmental sensitivity.
6) To ensure the application of reclamation standards consistent with integrated and sequential land use practices.
7) To promote a better understanding of mineral land use, including subsurface-surface interrelationships, and to manage jurisdictional overlaps with other resource agencies.

Supporting Strategies

1) To participate in land use planning programs and referral processes to ensure that Ministry concerns are recognized and addressed when surface lands are allocated.
2) To ensure a comprehensive assessment of mineral resource potential in areas subject to inter-ministry land use planning and allocation activities.
3) To augment the quality and quantity of the mineral and coal data base from Government and private sources and to conduct comprehensive, Province-wide evaluations of mineral potential in order to encourage private sector exploration and assist in land and water use planning.
4) Where feasible, to conduct detailed field evaluations of subsurface mineral and coal resources in all areas of moderate to high mineral potential that are proposed for single use designations that would preclude exploration activities.
5) To strictly enforce the "Guidelines for Mineral Exploration" and the "Guidelines for Coal Exploration".
6) To continue to develop, negotiate and implement special exploration techniques and reclamation standards in environmentally sensitive areas or other site specific circumstances.
7) To ensure strict enforcement of reclamation requirements for surface disturbances at the exploration, development and production stages.
8) Through education, to increase the awareness of other agencies of the significance of the mineral sector to the Provincial and National economies, and, more specifically, to the difference between surface and subsurface resources inventory and tenure, and the compatibility of exploration with most other land uses.
9) To the extent possible, to move toward the administration of mineral land use policy at the regional level.

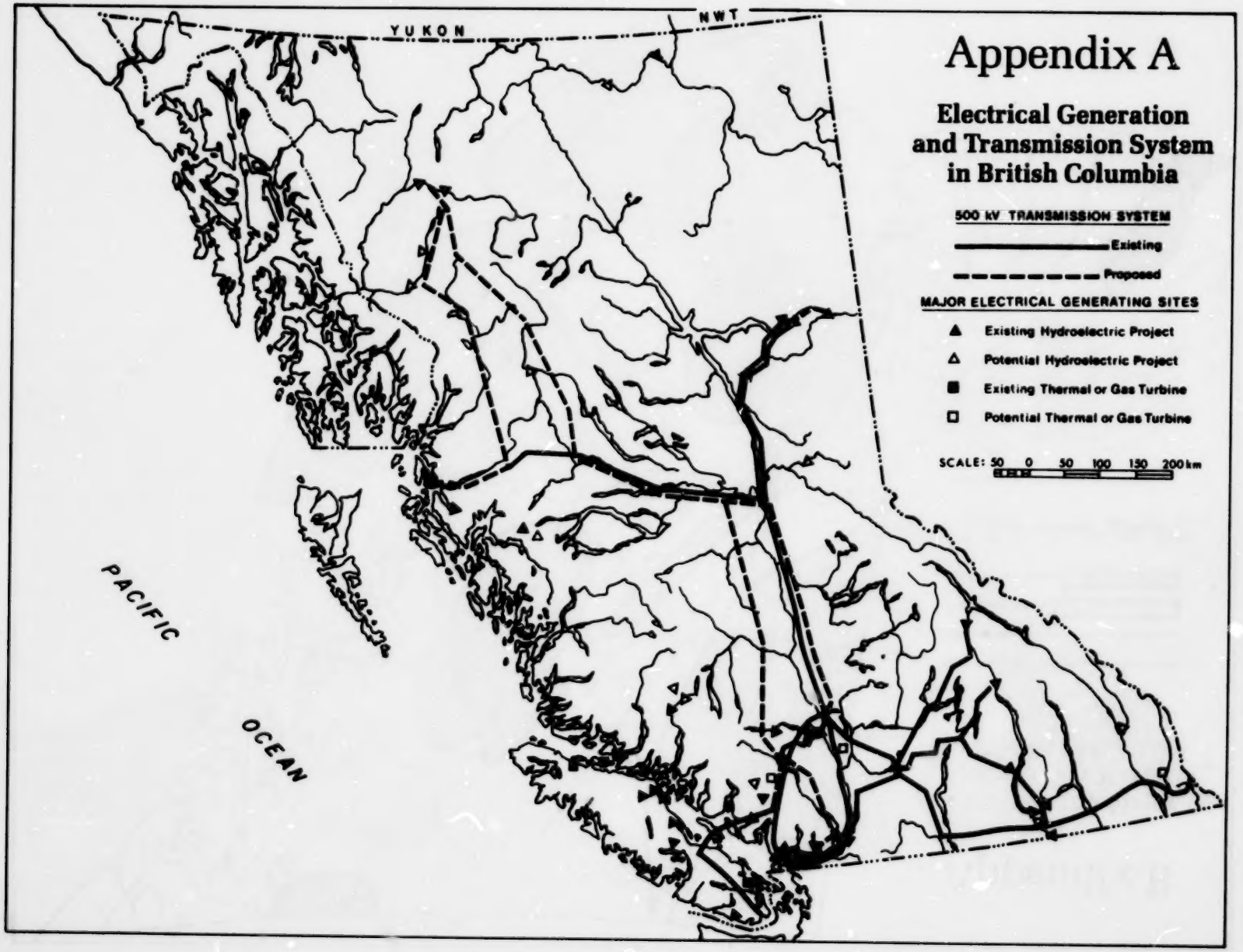
Summary

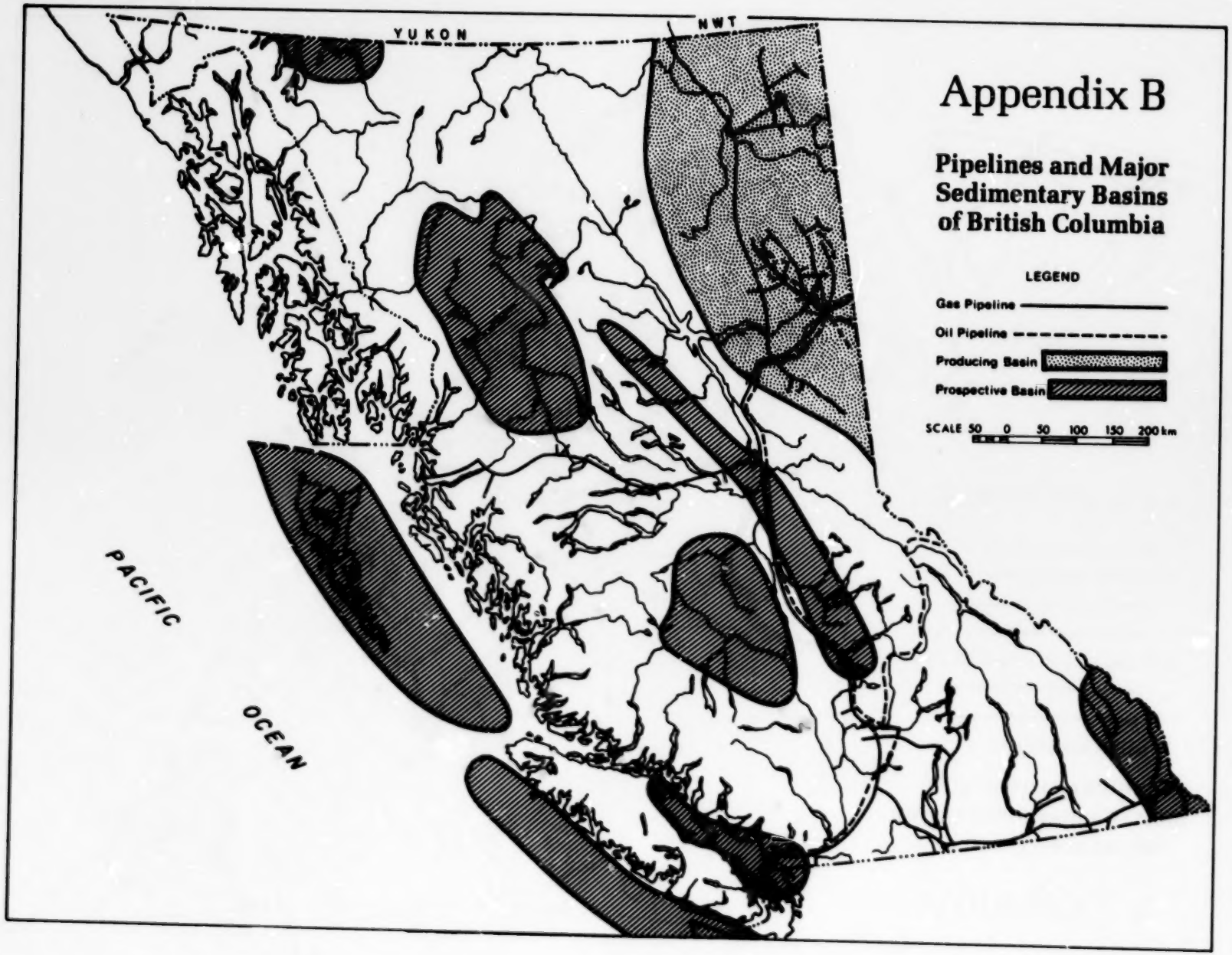
This information paper has reviewed the major land and water use challenges facing the Ministry. The sub-surface nature of petroleum, geothermal and mineral resources makes them difficult to inventory in the same manner as surface resources. This alone presents some unique problems in integrating with the traditional land use planning and allocation programs of other resource agencies.

The Ministry relies upon inter-ministry referral and review processes to ensure that development of these resources proceeds in a manner that minimizes the negative impacts on other resource values. These assessment procedures need to be better integrated with land use planning activities. It is also important that consultation continues to ensure sufficient flexibility in Provincial resource management programs so that development of energy, mineral and petroleum resources is not unduly restricted. In return, this Ministry is committed to consider the needs and concerns of other resource users and to negotiate appropriate exploration, development and reclamation standards to protect those interests.

The Ministry reaffirms its interest in receiving comments and suggestions on its policies respecting land and water use. As outlined in the preface these comments would be directed to:

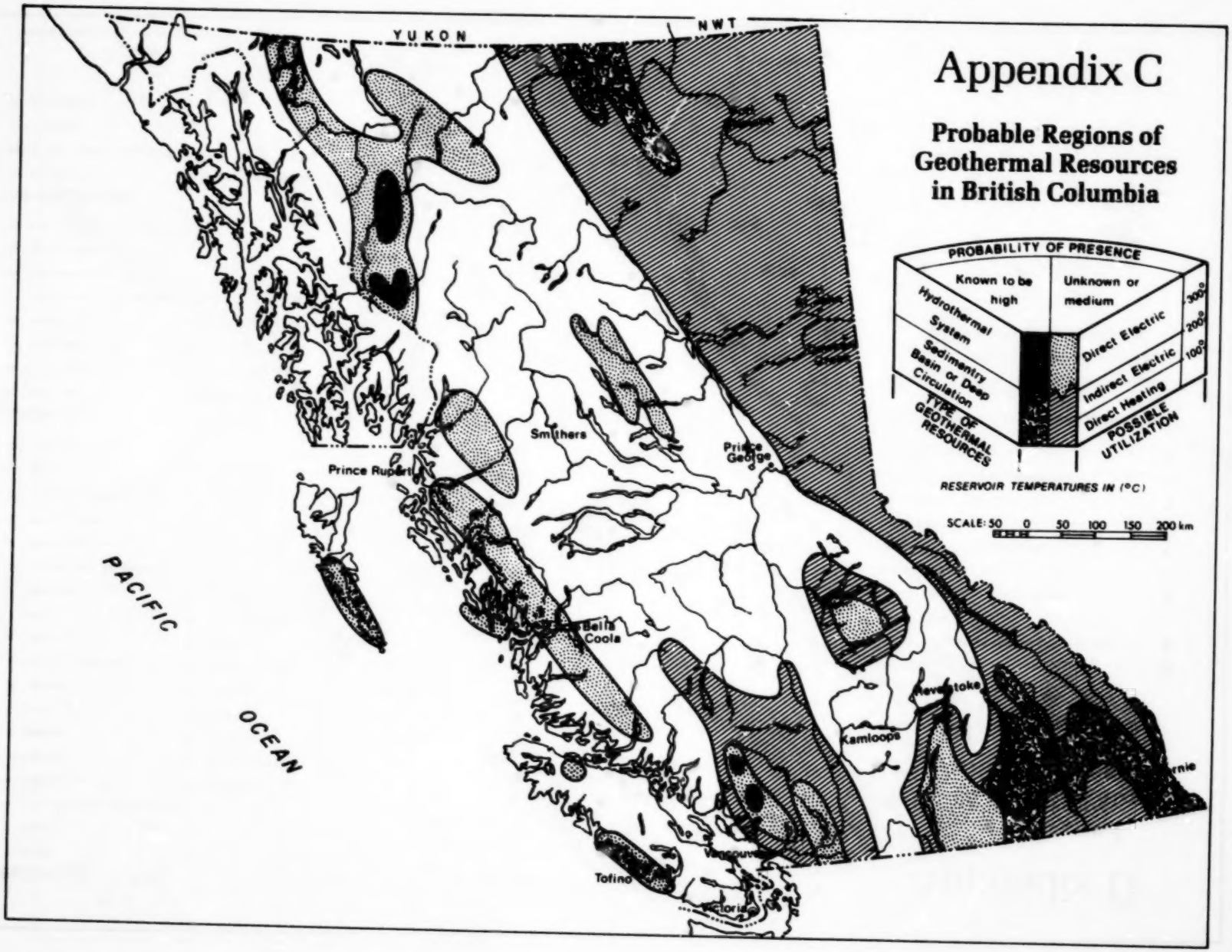
Dr. R. W. Durie
Chairman, Ministry Land Use Committee,
Assistant Deputy Minister,
Petroleum Resources Division
Ministry of Energy, Mines and
Petroleum Resources
Legislative Buildings
Victoria, B. C.
V8V 1X4


YUKON
NWT
PACIFIC
OCEAN
Appendix A
Electrical Generation and Transmission System in British Columbia
500 kV TRANSMISSION SYSTEM
Existing
Proposed
MAJOR ELECTRICAL GENERATING SITES
Existing Hydroelectric Project
Potential Hydroelectric Project
Existing Thermal or Gas Turbine
Potential Thermal or Gas Turbine
SCALE: 50 0 50 100 150 200 km


YUKON
NWT
PACIFIC
OCEAN
Appendix B
Pipelines and Major Sedimentary Basins of British Columbia
LEGEND
Gas Pipeline
Oil Pipeline
Producing Basin
Prospective Basin
SCALE 50 0 50 100 150 200 km

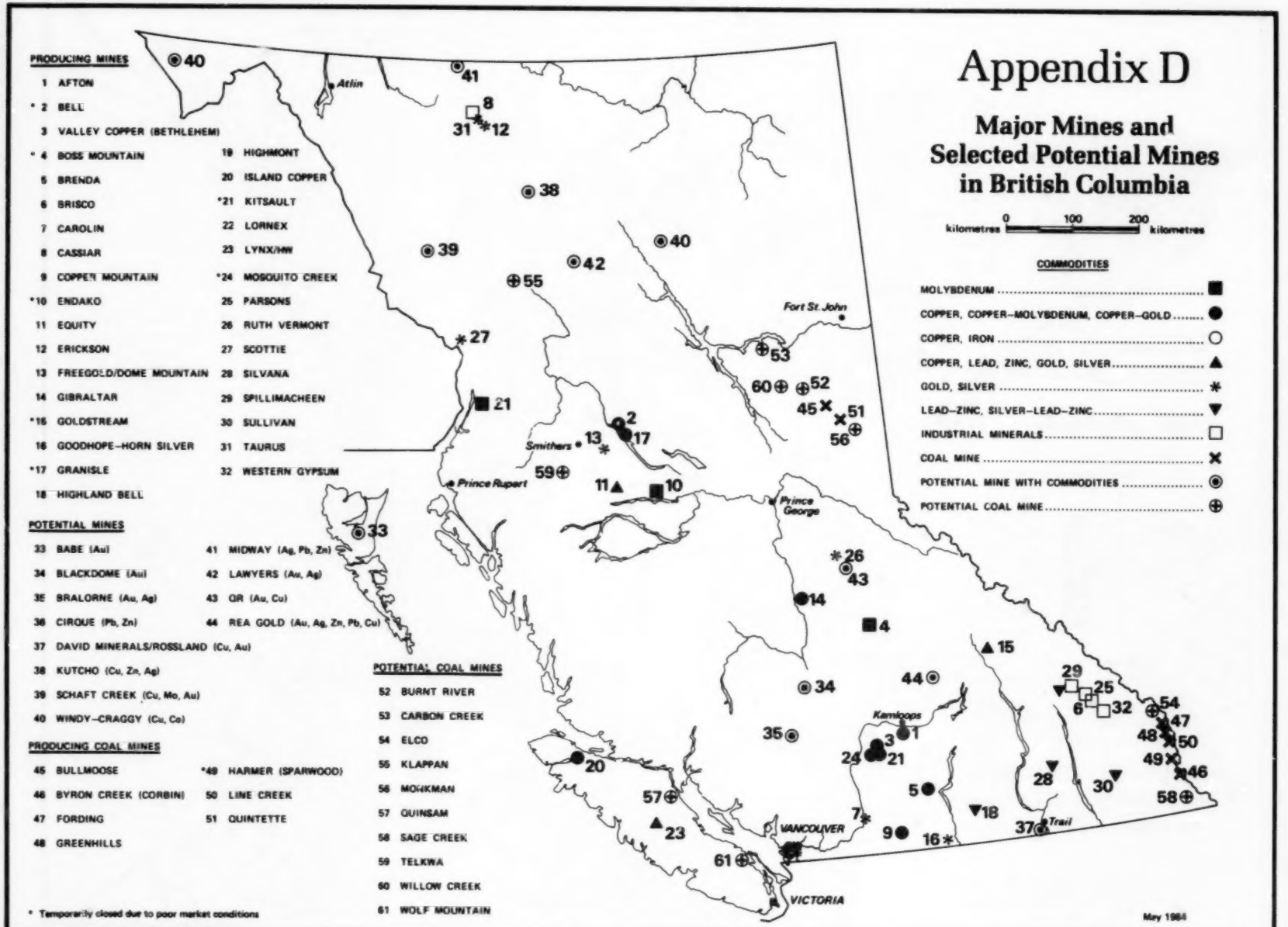
Appendix C

Probable Regions of Geothermal Resources in British Columbia



Appendix D

Major Mines and Selected Potential Mines in British Columbia



PRODUCING MINES

1 AFTON
* 2 BELL
3 VALLEY COPPER (BETHLEHEM)
* 4 BOSS MOUNTAIN
5 BRENDA
6 BRISCO
7 CAROLIN
8 CASSIAR
9 COPPER MOUNTAIN
*10 ENDAKO
11 EQUITY
12 ERICKSON
13 FREEGOLD/DOME MOUNTAIN
14 GIBRALTAR
*15 GOLDSTREAM
16 GOODHOPE–HORN SILVER
*17 GRANISLE
18 HIGHLAND BELL
19 HIGHMONT
20 ISLAND COPPER
*21 KITSAULT
22 LORNEX
23 LYNX/HW
*24 MOSQUITO CREEK
25 PARSONS
26 RUTH VERMONT
27 SCOTTIE
28 SILVANA
29 SPILLIMACHEEN
30 SULLIVAN
31 TAURUS
32 WESTERN GYPSUM

POTENTIAL MINES

33 BABE (Au)
34 BLACKDOME (Au)
35 BRALORNE (Au, Ag)
36 CIROQUE (Pb, Zn)
37 DAVID MINERALS/ROSSLAND (Cu, Au)
38 KUTCHO (Cu, Zn, Ag)
39 SCHAFT CREEK (Cu, Mo, Au)
40 WINDY–CRAGGY (Cu, Co)
41 MIDWAY (Ag, Pb, Zn)
42 LAWYERS (Au, Ag)
43 QR (Au, Cu)
44 REA GOLD (Au, Ag, Zn, Pb, Cu)

PRODUCING COAL MINES

45 BULLMOOSE
46 BYRON CREEK (CORBIN)
47 FORDING
48 GREENHILLS
*49 HARMER (SPARWOOD)
50 LINE CREEK
51 QUINTETTE

POTENTIAL COAL MINES

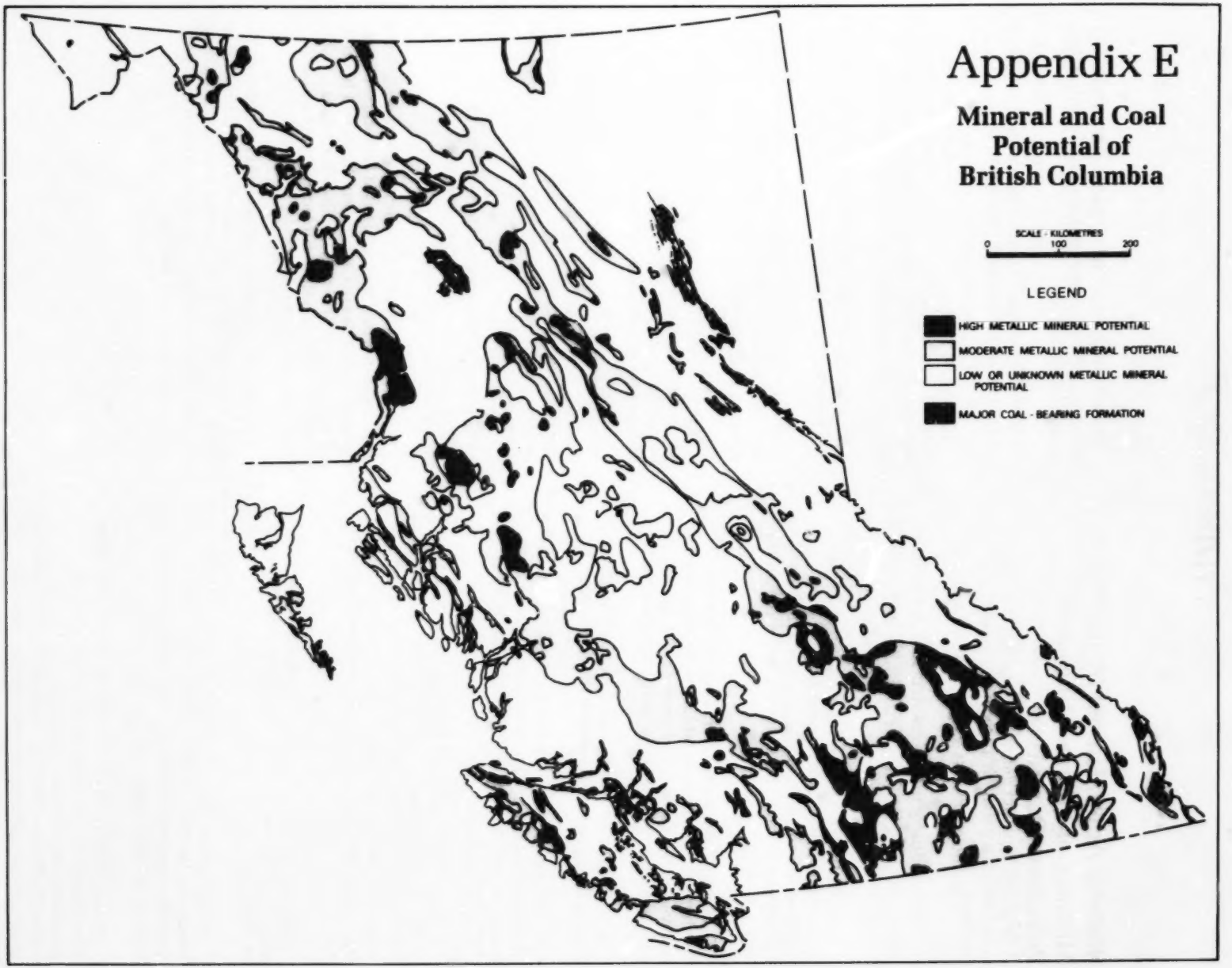
52 BURNT RIVER
53 CARBON CREEK
54 ELCO
55 KLAPPAN
56 MOICKMAN
57 QUINSAM
58 SAGE CREEK
59 TELKWA
60 WILLOW CREEK
61 WOLF MOUNTAIN

* Temporarily closed due to poor market conditions

May 1984

Appendix E

Mineral and Coal Potential of British Columbia



Appendix F

Statutes Administered by the Ministry of Energy, Mines and Petroleum Resources

Coal Act: This Act defines the general conditions under which a person may receive and hold title to coal land.

Copper Industry Incentives Act: This Act defines the amount to be paid to persons smelting or refining copper in the Province.

Gas Utility Act: This Act, subject to regulation under the *Utilities Commission Act*, includes construction and operational requirements regarding production, storage, transmission, and distribution of gas.

Geothermal Resources Act: This Act defines Geothermal Resources, establishes that they are reserved to the Crown, and provides for the administration and exploitation of the resource.

B. C. Hydro and Power Authority Act: The Act defines the operating powers of the Authority.

Hydro Power Measures Act: This Act describes the disposition of holdings of those companies which amalgamated to form the B. C. Hydro and Power Authority.

Indian Reserve Mineral Resource Act: This Act confirms and ratifies the agreement for the settling of differences between Canada and the Province respecting staking of mineral claims on Indian reserves in the Province (set out in schedule to said Act).

Mineral Act: This Act establishes procedures for mineral claims and for the transfer of their ownership.

Mineral Land Tax Act: This Act defines which lands may be designated as mineral land and describes tax rates in production and non-production areas of mineral land.

Mineral Processing Act: This Act establishes that all minerals produced in the Province shall be processed, smelted and refined in the Province subject to this Act and the availability of processing, smelting and refining facilities in the Province.

Mineral Prospectors Act: This Act provides a definition of the term prospector and describes the prospectors grant.

Mineral Resource Tax Act: This Act defines the tax payable to the Crown by mines operators.

Mines Act: This Act controls the operations of mines in both the exploration and production phases. The Act governs mine safety, conservation of the resource and reclamation of surface disturbances.

Mining (Placer) Act: This Act establishes procedures for placer leases.

Ministry of Energy, Mines and Petroleum Resources Act: This Act establishes that there shall be such a ministry and outlines its operating mandate.

Petroleum and Natural Gas Act: This Act provides for the administration and exploitation of Crown Petroleum and Natural Gas and regulates petroleum and natural gas development within the Province.

Petroleum Corporation Act: This Act establishes the B. C. Petroleum Corporation with authority to buy and sell, explore for, develop, and produce natural gas and petroleum and to build, purchase, and operate pipelines.

Petroleum Underground Storage Act: This Act defines underground storage areas and operating procedures for such areas.

Resource Investment Corporation Act: A section of this Act authorizes the Lieutenant Governor-in-Council to dispose of Crown petroleum and natural gas rights to the British Columbia Resources Investment Corporation, subject to terms and conditions he determines.

Utilities Commission Act: This Act establishes the B. C. Utilities Commission, sets out the duties of the Commission, and authorizes the regulation of energy utilities in the Province. The Commission may hold public inquiries and hearings.

Appendix G

Ministry of Energy, Mines and Petroleum Resources Publications Related to Land Use

— Guidelines for Mine Development
— Guidelines for Coal Exploration
— Guidelines for Mineral Exploration

— Guidelines for Construction and Cleanup of Roads, Leases and Seismic Lines in Petroleum Exploration Areas
— British Columbia Sub/Surface Rights
— An Energy Secure British Columbia: The Challenge and the Opportunity.
— Energy Project Review: Guide to Agencies
— Guide to the Energy Project Review Process
— Implementation of Conditions of an Energy Project Certificate and Energy Operation Certificate: A Technical Discussion Paper
— Energy Resources Map of British Columbia

Complete lists of Ministry publications and maps may be obtained from:

Ministry of Energy, Mines and
Petroleum Resources
Publications Distribution
552 Michigan Street (Basement)
Victoria, B. C.
V8V 1X4

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